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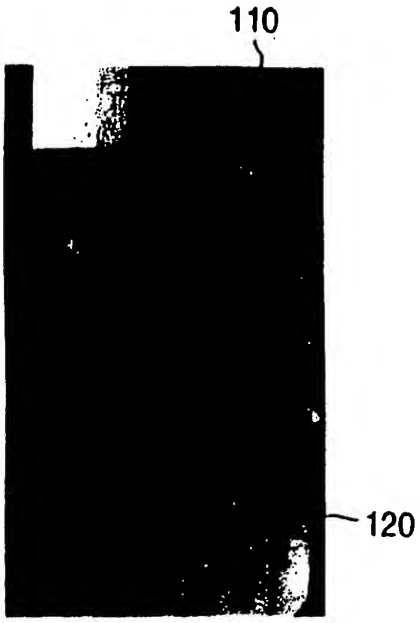


FIG. 1

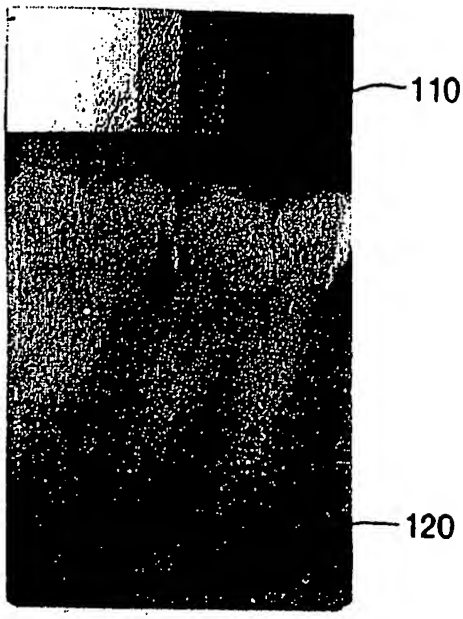


FIG. 2

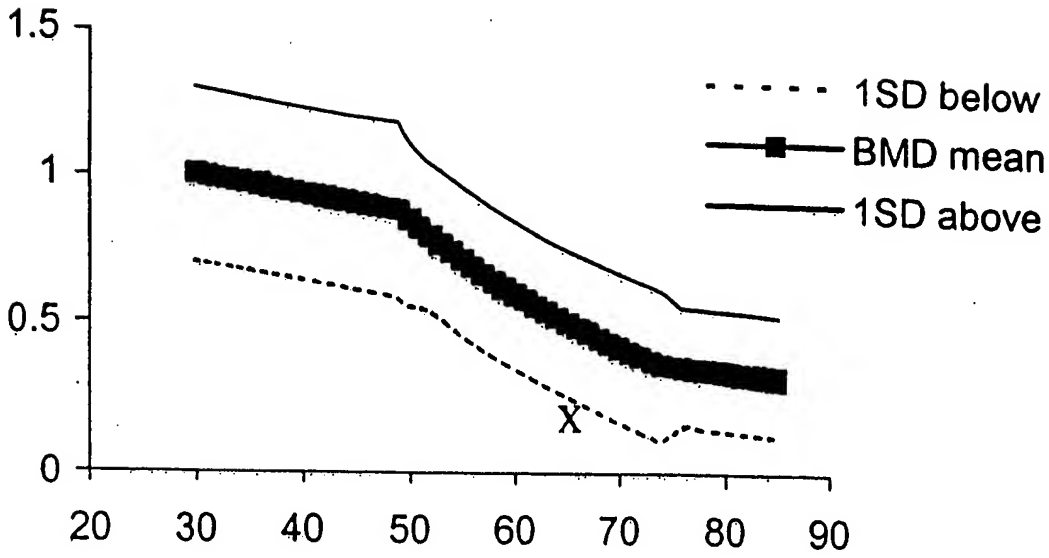


FIG. 3

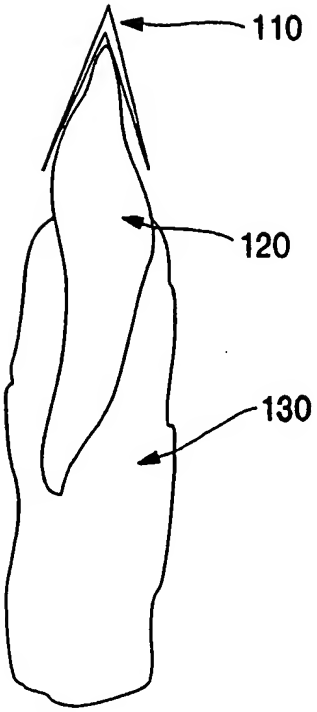


FIG. 4

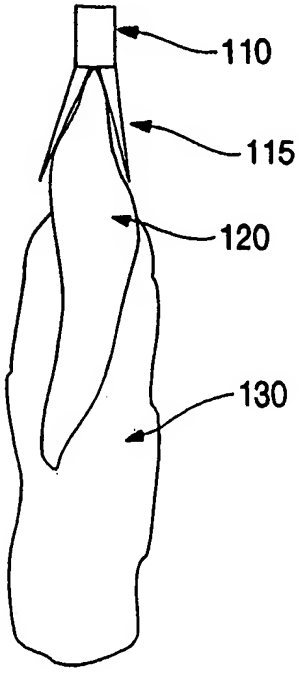


FIG. 5

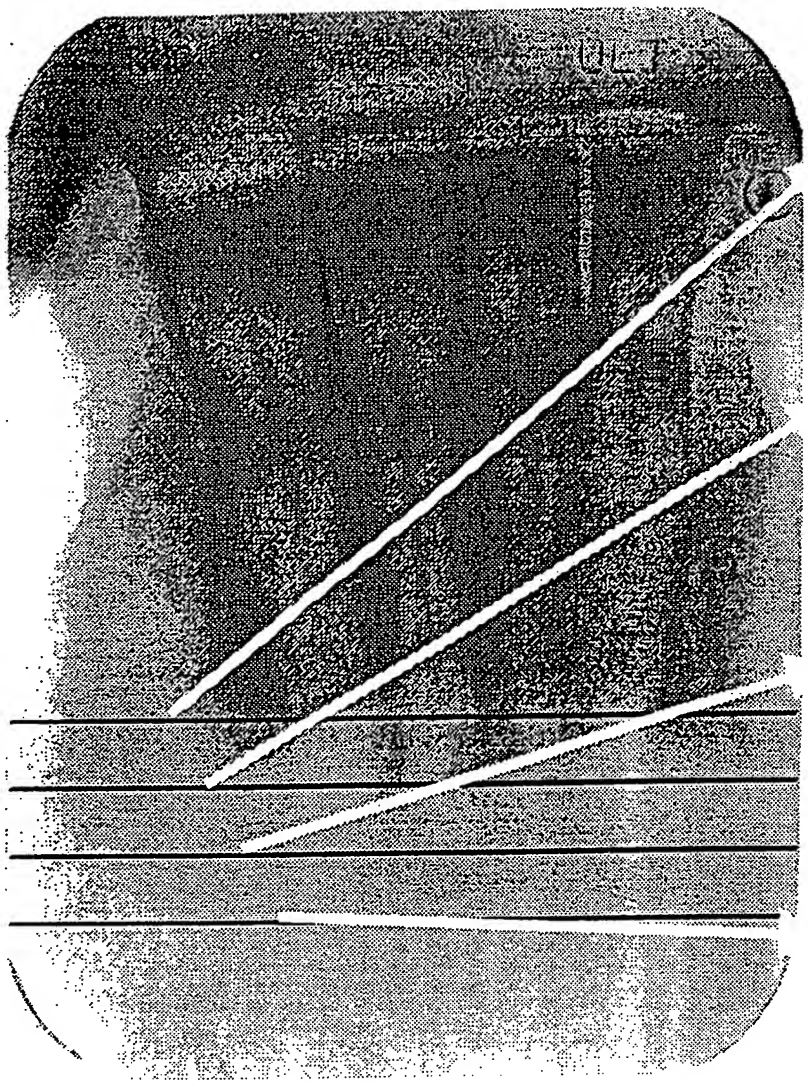


FIG. 6A

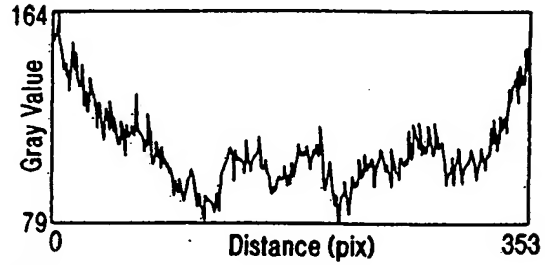


FIG. 6B

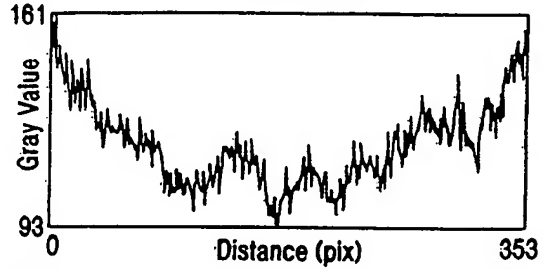


FIG. 6C

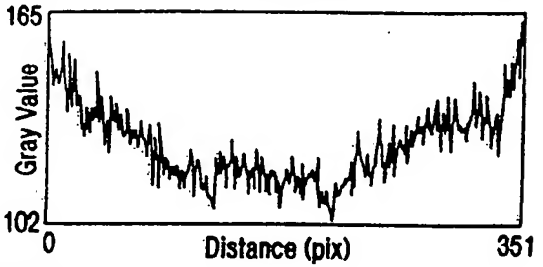
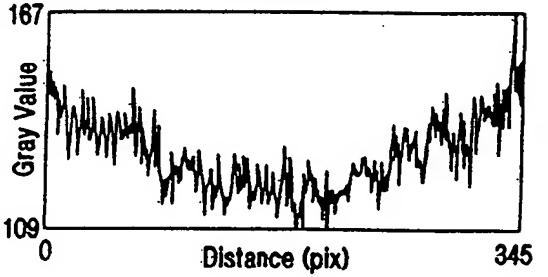


FIG. 6D



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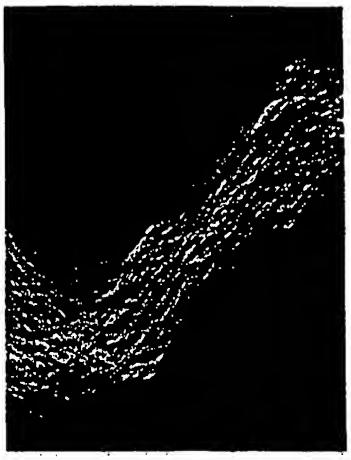


FIG. 7A

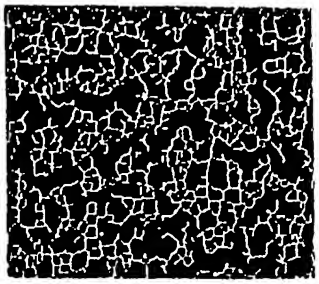


FIG. 7B

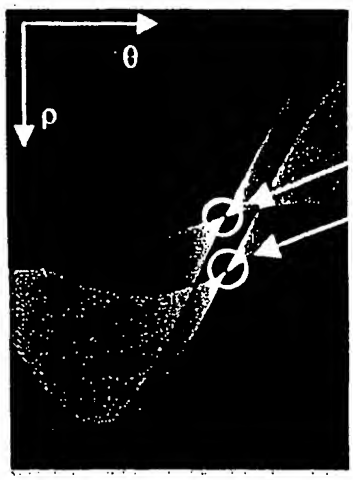


FIG. 8A

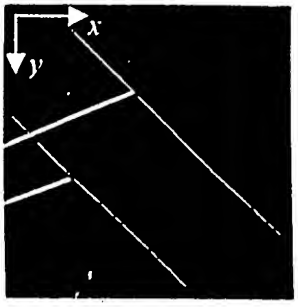


FIG. 8B

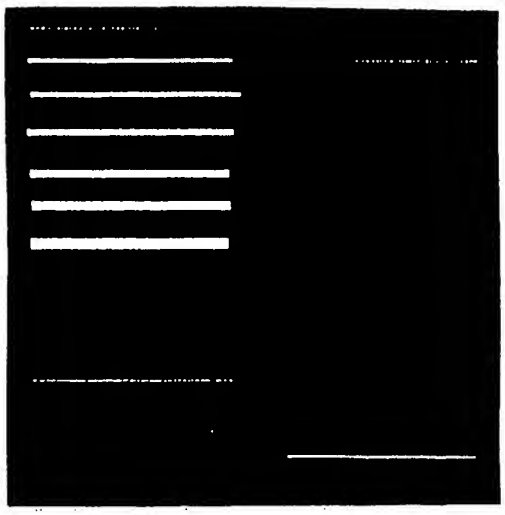


FIG. 9

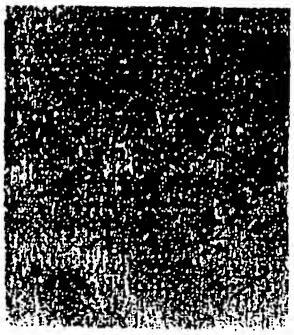


FIG. 10A

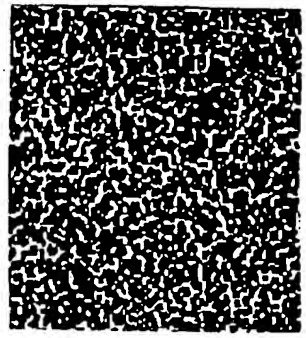
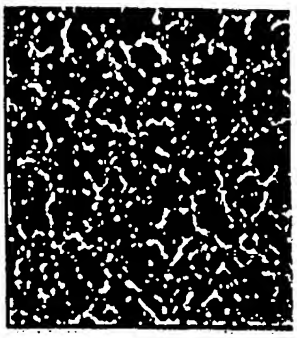


FIG. 10B



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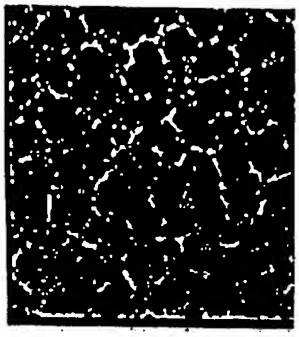

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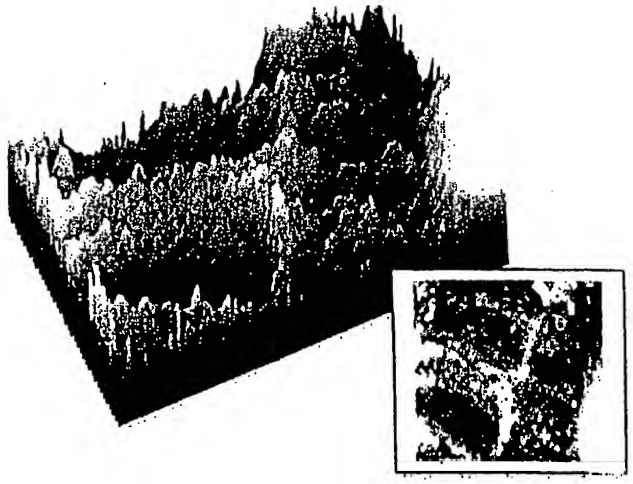


FIG. 11

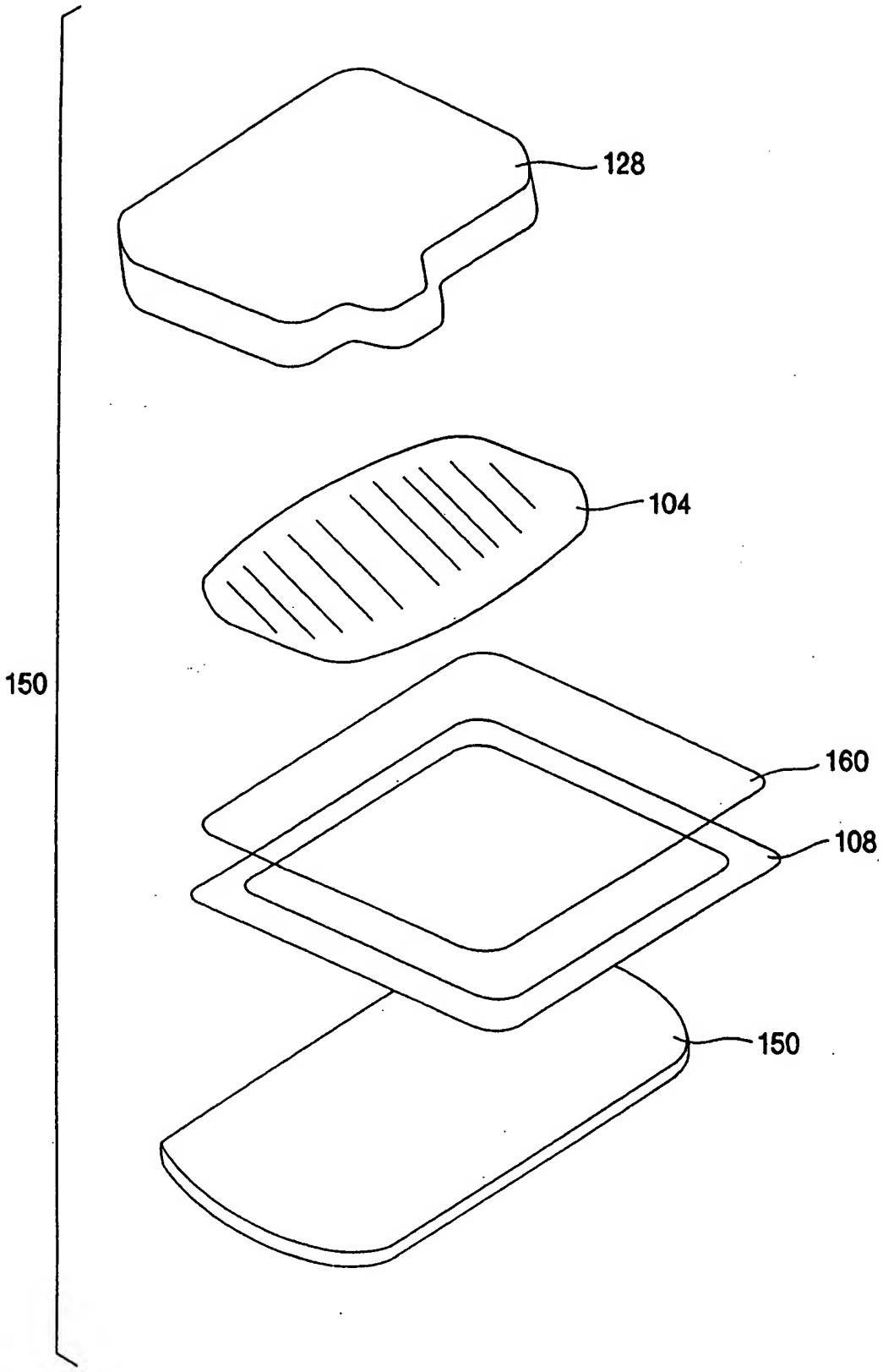


FIG. 12

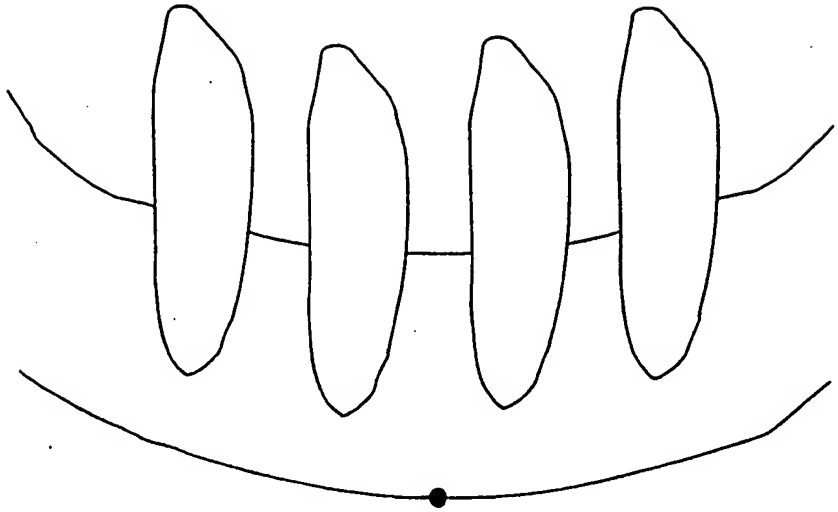


FIG. 13

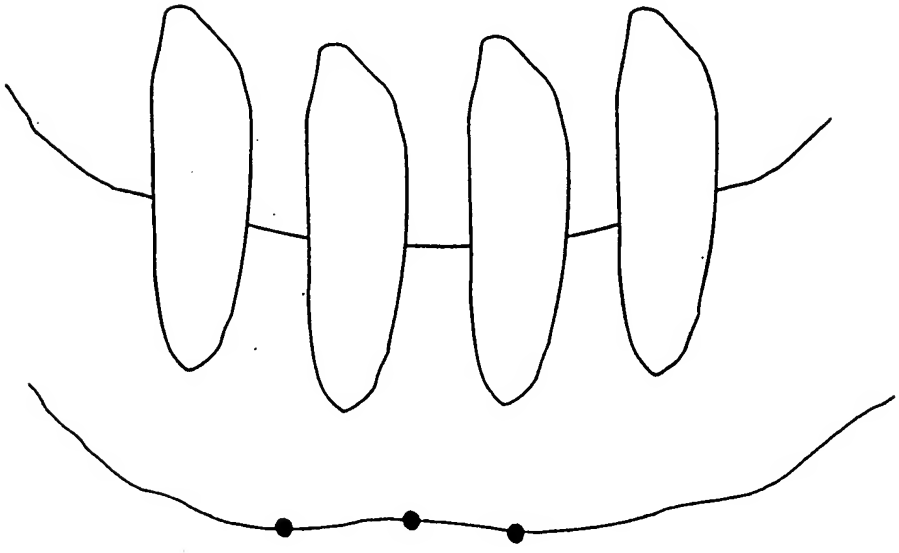


FIG. 14

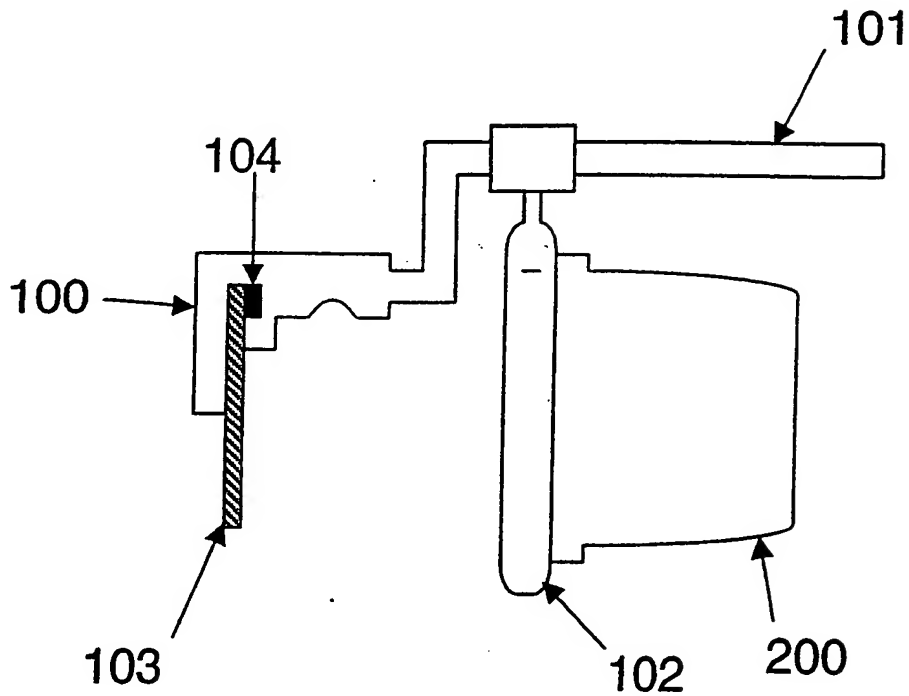


FIGURE 15

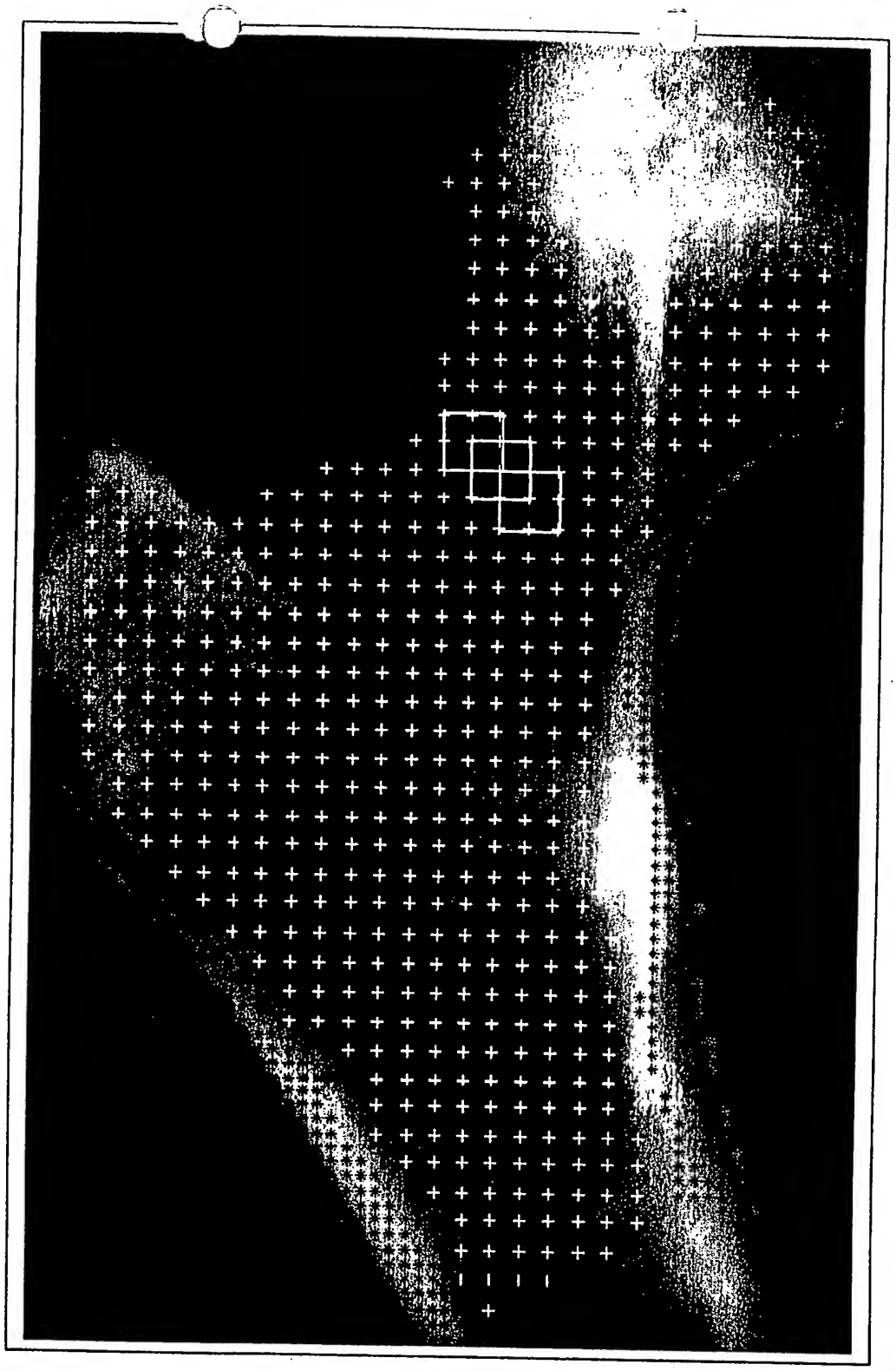


Figure 16. An example of a regular interval sampling field for microarchitecture (+) and a higher density sampling field for macro-anatomical features(*) on a femur radiograph. White rectangles are examples of overlapping window positioning.

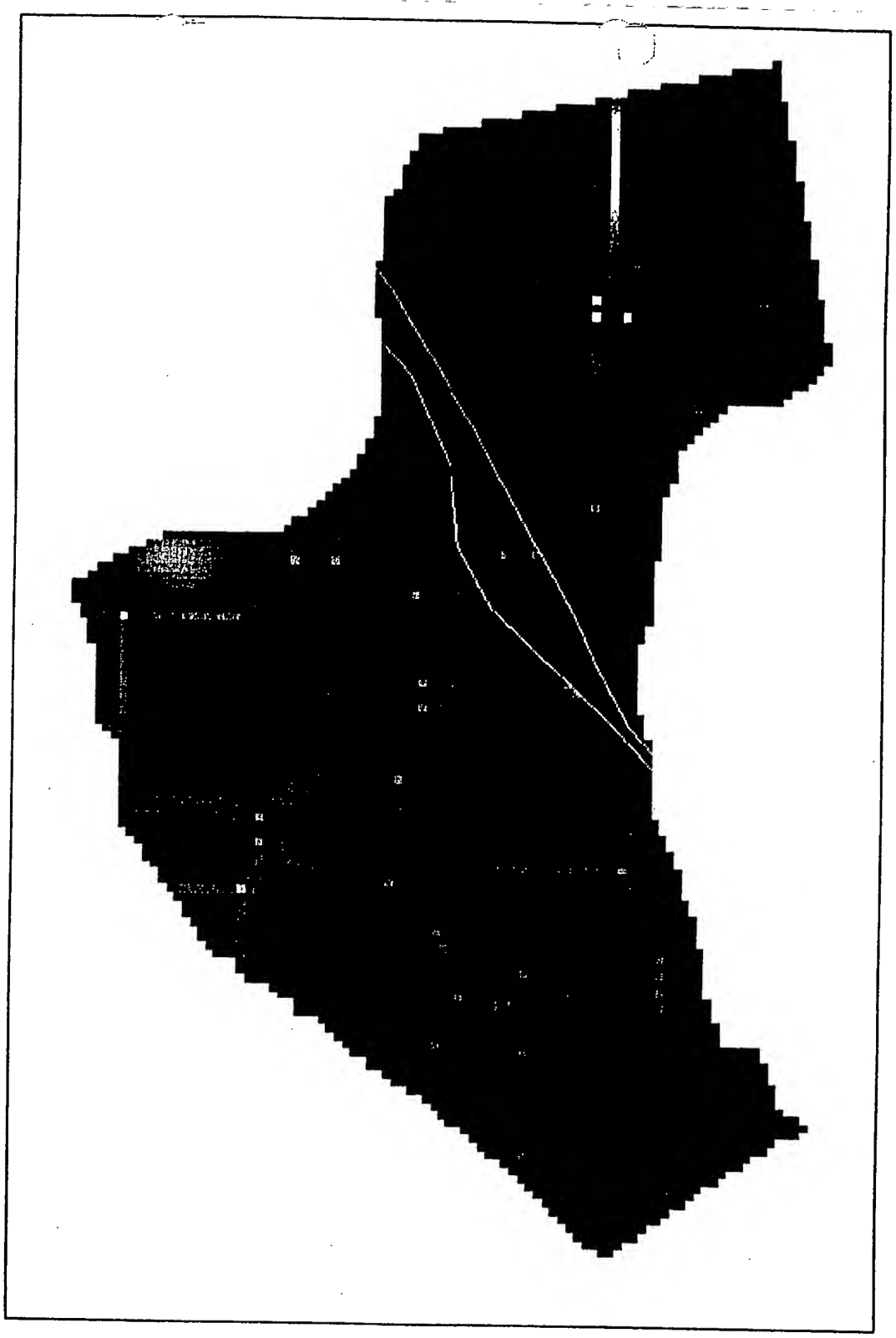


Figure 17. Watershed segmentation boundaries superimposed on a parameter map. The two white lines are the actual fracture paths resulted from an in-vitro mechanical loading test.

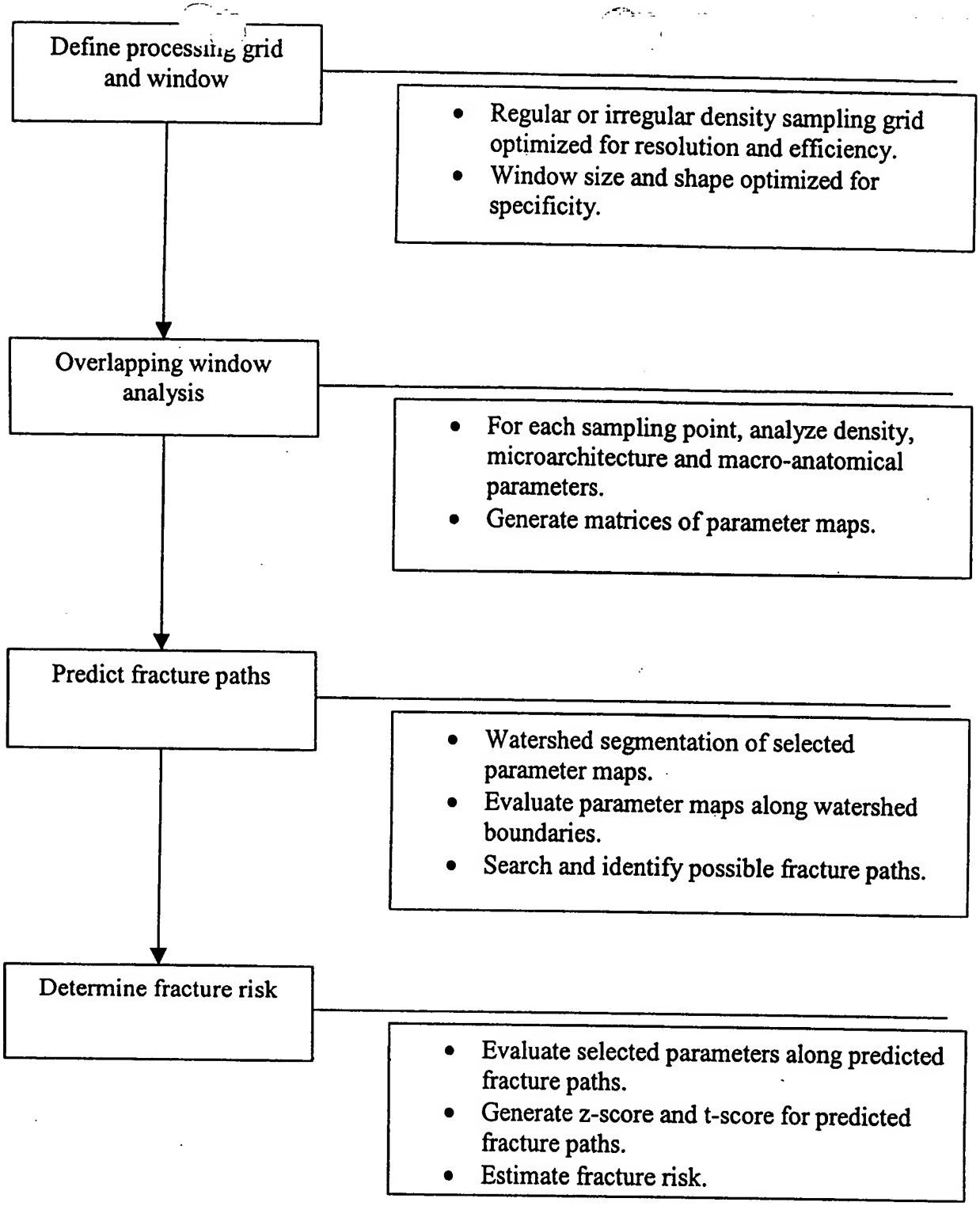
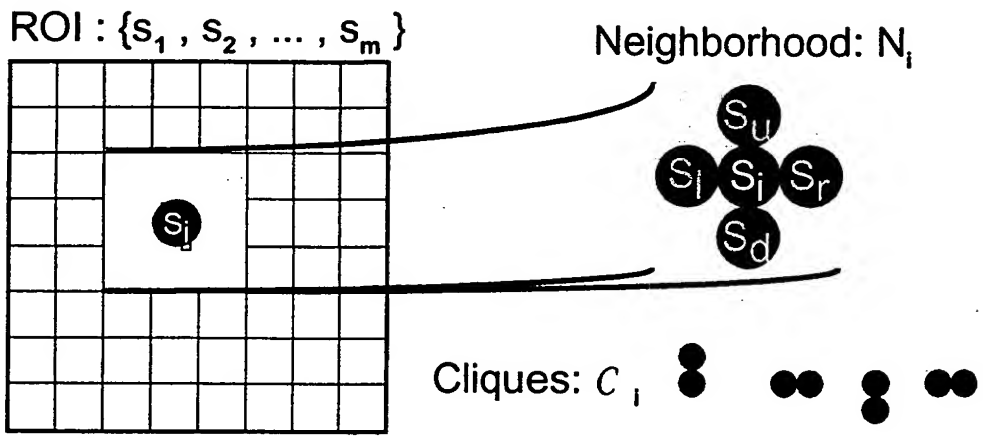


Figure 18. Process to determine fracture risk using overlapping window processing and fracture paths prediction.



Si:{F1i , F2i , … , Fni} -> feature set at site Si

Joint distribution of feature set given neighboring sets:

$$P(s_i \mid s_K , s_K \in ROI) = P(s_i \mid s_K , s_K \in N_i)$$

Figure 19

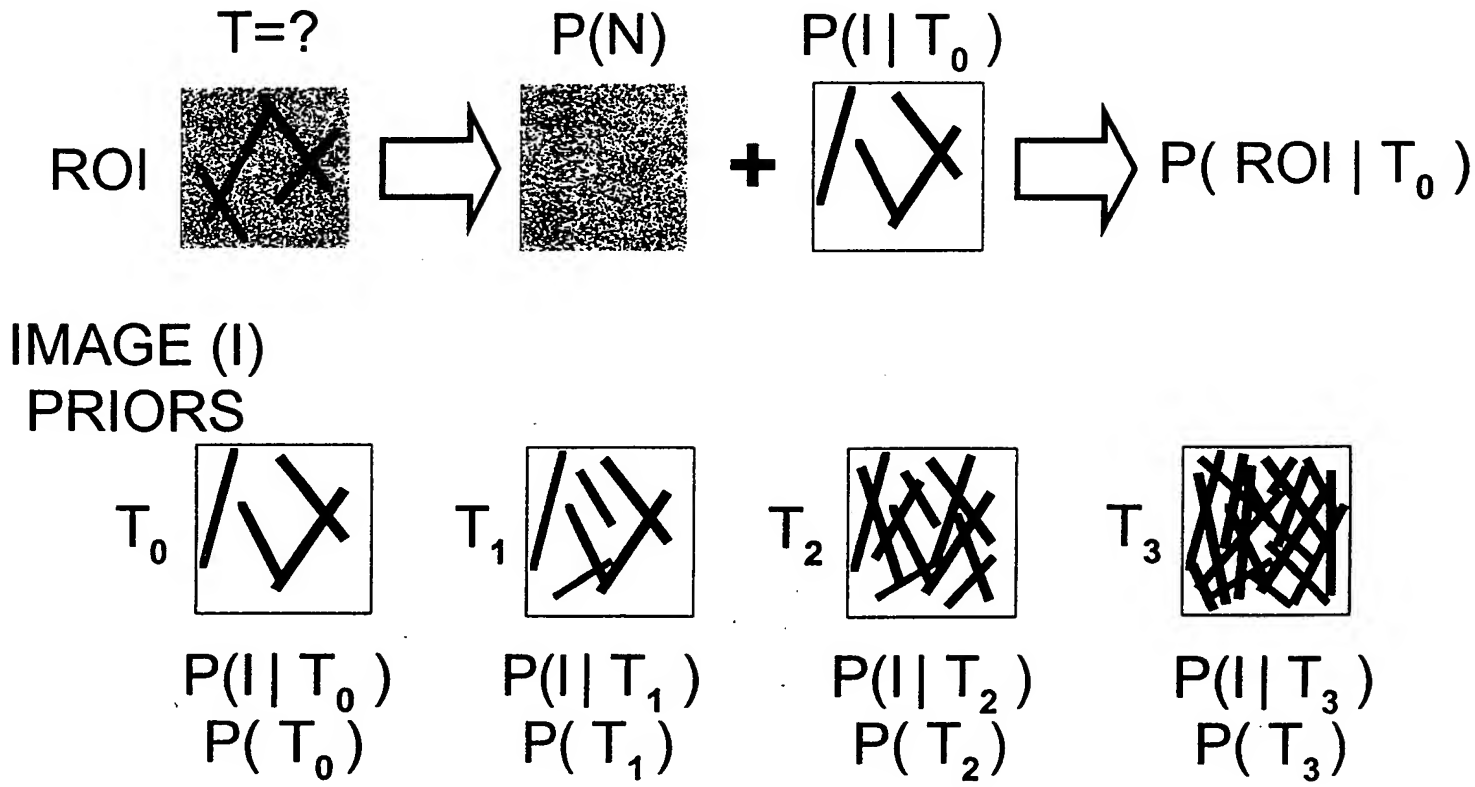

T=?
P(N)
P(I | T0)
ROI
+
P(ROI | T0)
IMAGE (I)
PRIORS
T0
T1
T2
T3
P(I | T0)
P(T0)
P(I | T1)
P(T1)
P(I | T2)
P(T2)
P(I | T3)
P(T3)

Figure 20

A posteriori density distribution

$$P(T_i \mid ROI) = \frac{P(ROI \mid T_i)\, P(T_i)}{P(ROI)}$$

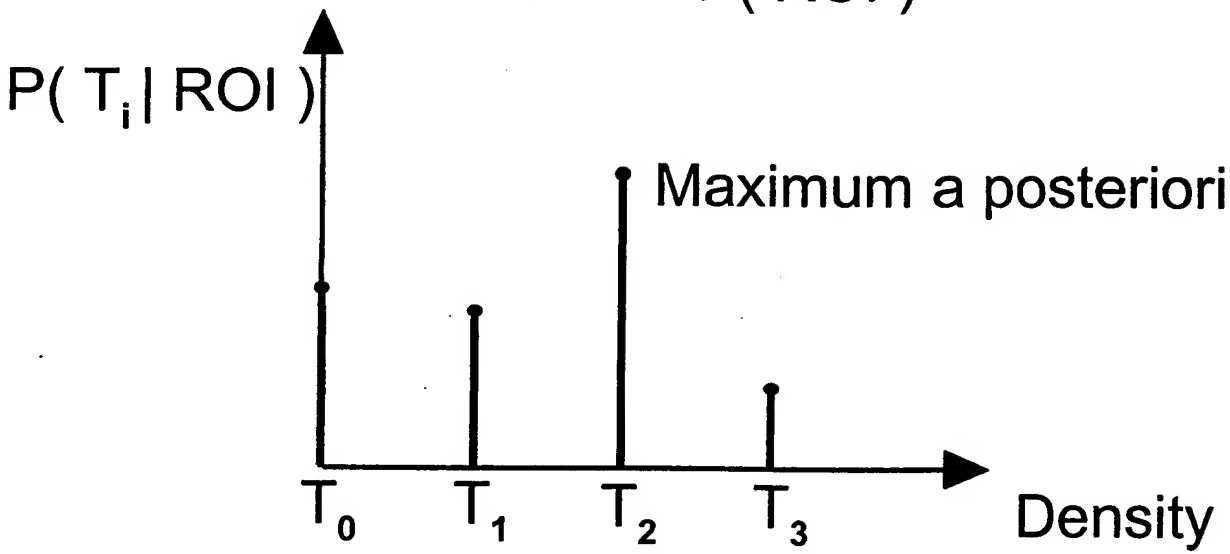


Figure 21

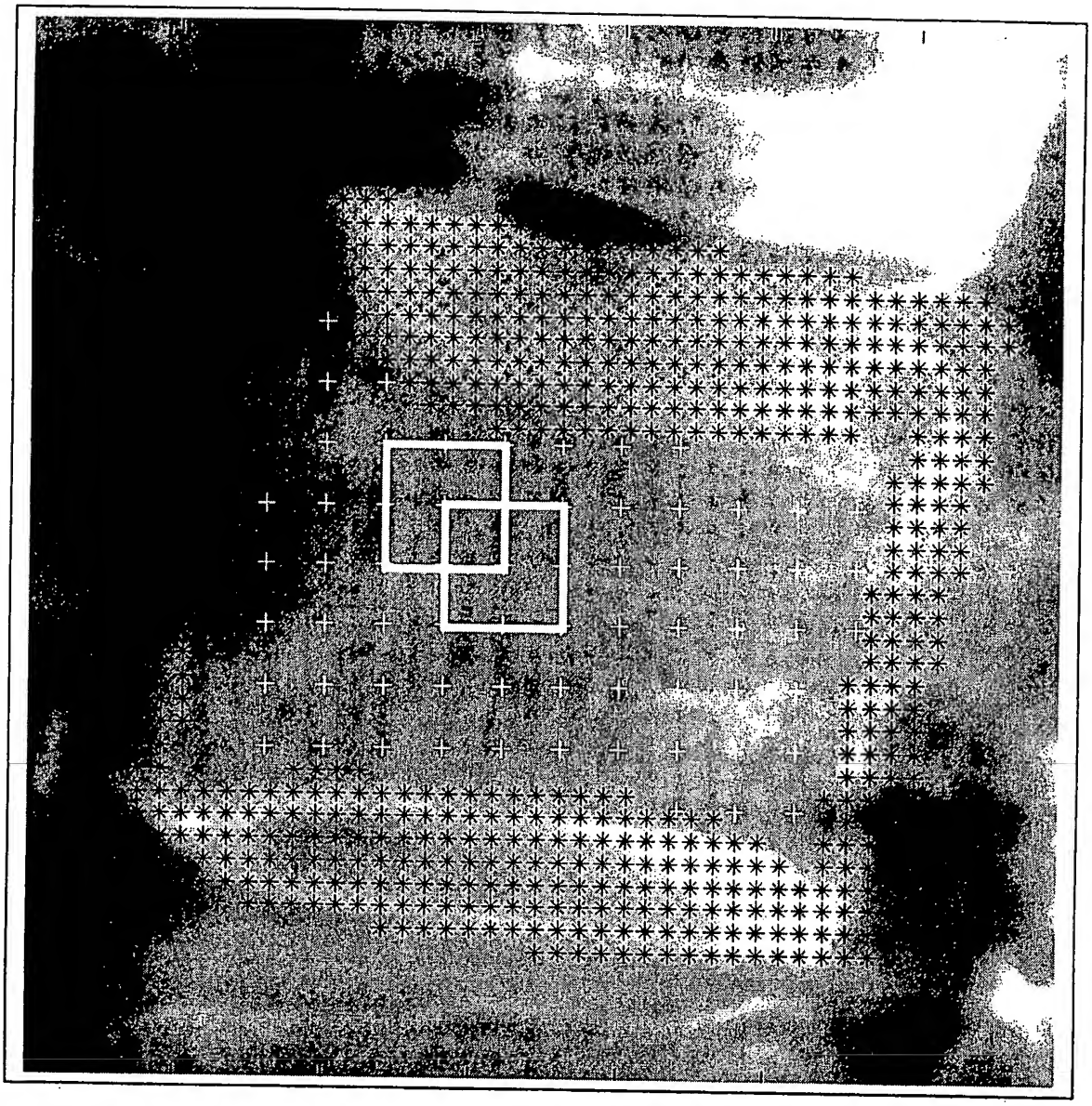


Figure 22

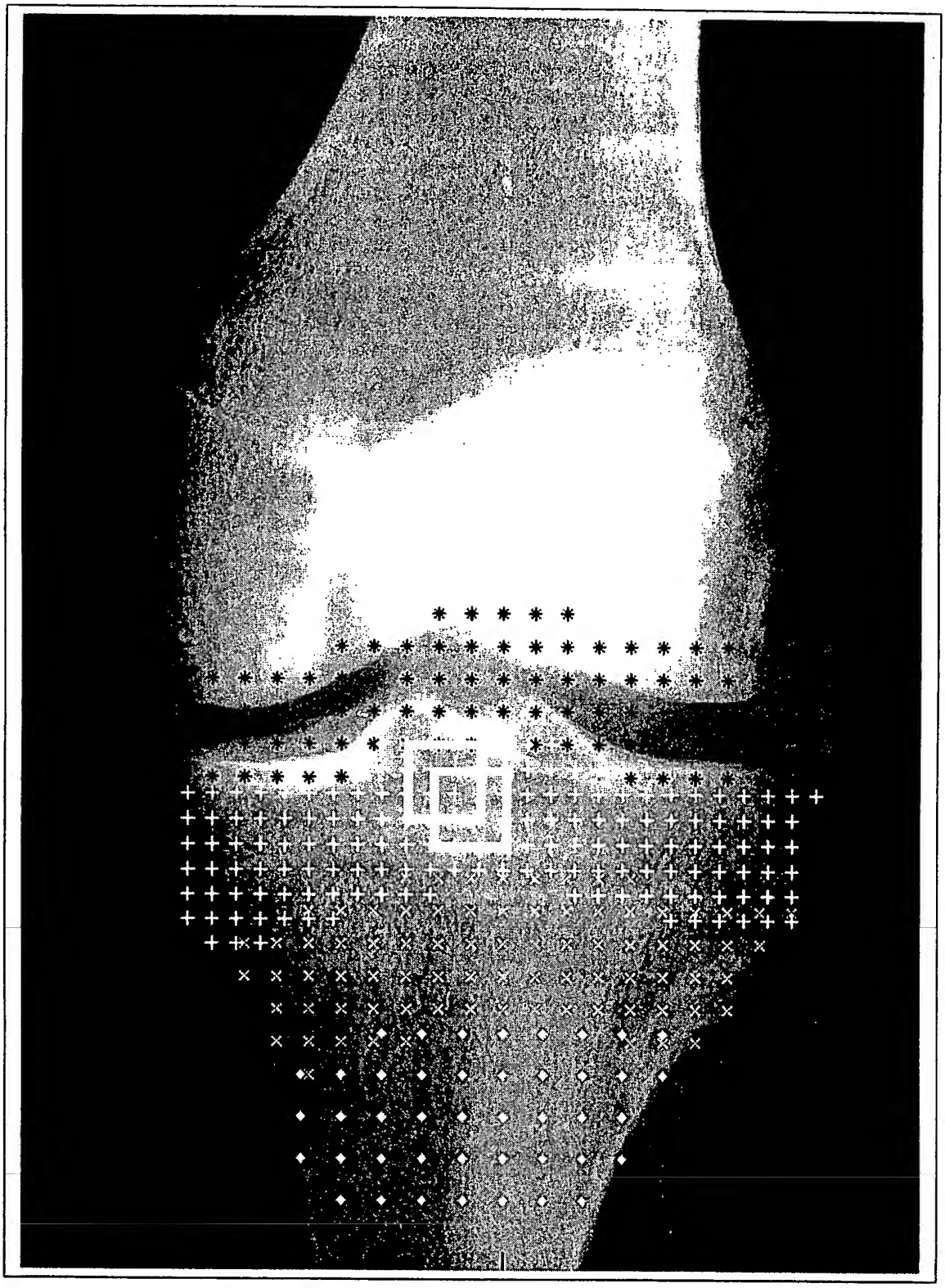
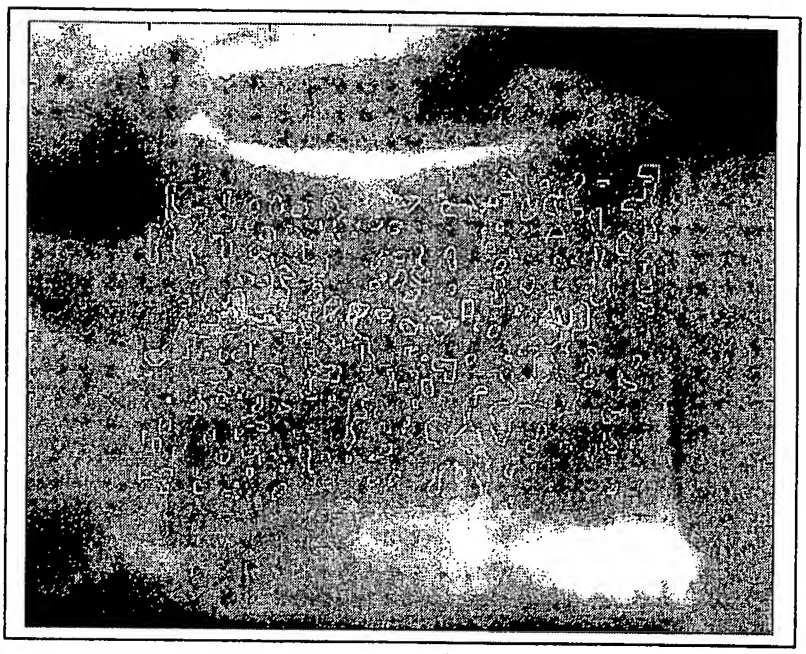


Figure 23



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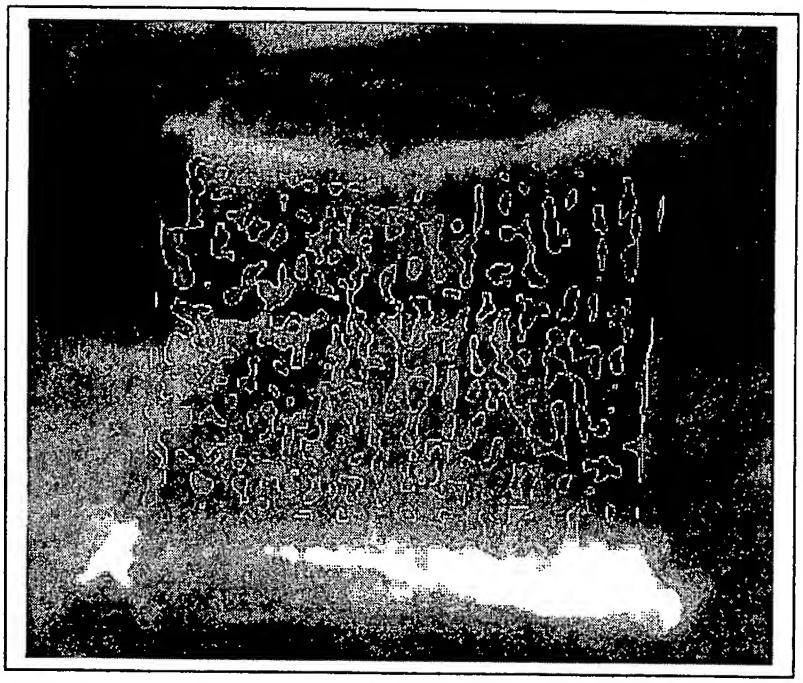

(b)

Figure 24